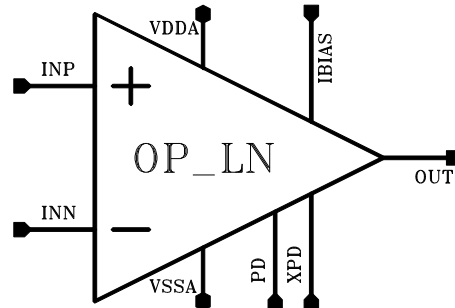


Key Parameters

- Small Area 0.031 mm²
- Size x = 159.45 μm, y = 190 μm
- Supply Voltage 3.0 to 3.6V
- Temperature Range -40 to 125°C
- Low Offset
- Low Noise

Symbol



Process Characteristics

- Fabrication Process: C35 (0.35μm)

General Description

The OP_LN is an internally compensated operational amplifier for low noise applications.

A bias current of 7 - 19μA must be provided externally.

For biasing the cell BBIAS can be used. OP_LN provides a power down mode

1 Pin Description

Pin	Description	Cap.
OUT	Output Voltage	Analog
INP	Pos. Input Voltage	Analog
INN	Neg. Input Voltage	Analog
XPD	Power Down not	Digital
PD	Power Down	Digital
VDDA	Positive Analog Supply Voltage	Supply
VSSA	Negative Analog Supply Voltage	Supply
IBIAS	Input Current	Analog

2 TECHNICAL DATA FOR 3.3V SUPPLY

($T_{\text{junction}} = -40$ to 125°C , $V_{\text{DDA}} = +3.0\text{V}$ to $+3.6\text{V}$, $C_L = 10\text{pF}$, $R_L = 10\text{M}\Omega$, unless otherwise specified)

3 GENERAL PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
T_{junction}	Junction Temperature		-40	27	125	$^{\circ}\text{C}$
X	x – Size of macro cell			159.45		μm
Y	y – Size of macro cell			190		μm

4 DC PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{os}	Input Offset Voltage		-2		2	mV
$I_{\text{BIAS}}^{1)}$	Bias Current		7.3	11.4	19.5	μA
CMIR-L	Com. Mode Input Range Low		0	0.17	0.62	V
CMIR-H	Com. Mode Input Range High ($V_{\text{DDA}} - \text{CMIR-H}$)		0.56	0.85	1.05	V
$V_{\text{out-L}}$	Output Range Low		0.14	0.20	0.32	V
$V_{\text{out-H}}$	Output Range High ($V_{\text{DDA}} - V_{\text{out-H}}$)		0.16	0.25	0.42	V

5 OUTPUT PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_{\text{source}}^{2)}$	Output Source Current		0.15	0.27	0.52	mA
$I_{\text{sink}}^{2)}$	Output Sink Current		5.13	14.29	30.55	mA

-
- 1) The bias current was produced with the cell BBIAS
 - 2) The power consumption will vary with the output current
 - 3) In closed loop configuration
 - 4) The input voltage was 1Vpp

6 AC PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Rout ³⁾	Output Resistance	1 kHz	0.27	0.39	0.82	Ω
A0	Open Loop Gain		92	100	103	dB
GBW	Gain Bandwidth		1.71	2.39	3.67	MHz
Φ_m	Phase Margin		63	66	70	deg
GBW	Gain Bandwidth	50pF 1M Ω	1.64	2.32	3.55	MHz
Φ_m	Phase Margin	50pF 1M Ω	48	55	61	deg
CMRR ⁴⁾	Common Mode Rej. Ratio	1 kHz	66	69	73	dB
PSRRVdd	Pos. Power Supply Rej. Ratio	1 kHz	101	109	115	dB
PSRRVss	Neg. Power Supply Rej. Ratio	1 kHz	66	69	73	dB
THD ⁴⁾	Total Harmonic Distortion	1 kHz	-127	-118	-86	dB
THD ⁴⁾	Total Harmonic Distortion	100 kHz	-92	-81	-55	dB

7 NOISE PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
En10Hz	Equiv. Input Noise	10Hz	-	0.1	-	$\mu\text{V}/\sqrt{\text{Hz}}$
En100kHz	Equiv. Input Noise	100kHz	-	17	-	$\text{nV}/\sqrt{\text{Hz}}$

8 POWER REQUIREMENTS

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
VDDA	Pos. Analog Supply Voltage		3.0	3.3	3.6	V
VSSA	Neg. Analog Supply Voltage		0	0	0	V
IDDA	Supply Current Analog		0.17	0.30	0.58	mA
Pdiss_tot	Total Power Consumption		0.52	0.99	2.09	mW

9 TRANSIENT PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
SRP	Slew Rate Rise		1.25	2.25	4.38	$\text{V}/\mu\text{s}$
SRN	Slew Rate Fall		1.31	2.22	4.05	$\text{V}/\mu\text{s}$
TSP	Settling Time Rise		0.36	0.60	1.32	μs
TSN	Settling Time Fall		0.55	0.83	1.17	μs
Twakeup	Wakeup Time		0.90	1.72	2.74	μs

- 1) The bias current was produced with the cell BBIAS
- 2) The power consumption will vary with the output current
- 3) In closed loop configuration
- 4) The input voltage was 1Vpp

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